The *Emerging* Student

1991

Relationships Among the *Cognitive, Social* and *Physical* Domains of Development

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Relationships Among the Cognitive, Social and Physical Domains of Development

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FOREWORD

How children think, feel and grow affects how they learn. This is true at home, where children learn in the context of daily life, and at school. In classrooms, our knowledge of how students learn can help us be more effective teachers. Curriculum developers must also be aware of how students learn in the context of the classroom, to help them prepare the best possible materials. Parents, and other adults who deal with children, will find it helpful to understand the connections among the social, physical and emotional areas of children's growth.

Educators have always sought to base the curriculum on what we know about student growth and development. This document completes a series of four comprising a framework for describing children's development through the school years. Each of the four documents incorporates insights gained through research and practice.

Students' Thinking: Cognitive Domain

This document outlines the intellectual stages and processes through which children progress. It includes information on the kinds of support students need to learn more effectively at different stages.

Students' Interactions: Social Sphere

This document addresses the affective, interpersonal and moral development of children. It includes a section on educating for growth in these areas.

Students' Physical Growth: Physical Dimension

This document discusses perception, structural growth and motor development and relates these to the school context.

The Emerging Student: Relationships Among the Cognitive, Social and Physical Domains of Development

This document looks at the whole child, or student, as a productive learner, integrating all the domains of development—cognitive, social and physical. It emphasizes the need for providing balanced curriculum and instruction.

The developmental framework documents provide the background information needed to develop curricula that meet and support students' growth. In the school, teachers and principals play a significant role in helping students develop their potential and become integrated, well-rounded individuals. This monograph will help teachers and administrators be sensitive to the connections among the domains of development as their students learn and grow.

INTRODUCTION

Because learning is complex, we often study aspects of children's learning in small pieces. We hope that by understanding the pieces, we will come to understand the whole. Like so many things, the act of learning is more than just the sum of its parts. This fourth document in the series takes up the task of looking at the whole picture of the student as he or she learns. Since each student brings the cognitive, affective, social, moral and physical domains into the classroom, it is perhaps a truism to say that each act of learning integrates all domains. Certainly, research reminds us that there are complex relationships among the various aspects of a child's development. Still, perhaps because of the human need to simplify, we sometimes treat the child who is learning as though one aspect of development can be segregated from another.

Programs of study take into account all the domains in students' development, as is appropriate to the subject or level under discussion. This is done by including learner expectations for the relevant domains. In the elementary years, the program continuity policy recognizes and seeks to nurture the holistic nature of children's learning. The Ethics course for Grade 8 students is a particularly apt example of the integration of several domains. At the senior high level, the Career and Life Management (CALM) course demonstrates a commitment to students' development in all domains.

The following examples of learner expectations are from the CALM curriculum. The student develops cognitively by:

- understanding gross and net income
- identifying components of a personal financial plan
- defining the career planning process:
  - developing a personal profile
  - exploring the world of work (occupational profile)
  - establishing a personal plan
  - implementing the plan.

The student develops socially by:

- building techniques for communicating effectively and managing stress related to social or sexual relationships:
  - ending relationships
  - loneliness
  - saying no
- demonstrating appropriate methods of expressing feelings, ideas and needs.

The student develops physically by:

- building awareness of health concerns that are prevalent in society:
  - nutrition
  - exercise
  - substance use and abuse
  - stress
- developing strategies for assessing and maintaining personal health and a healthy lifestyle.

There is still much to be learned about the relationships among domains; this document describes some of what we know. Three of the most significant areas of growth for children are **language learning**, **motivation** and **self-image**, since these pervade all school learning. The focus in this document is on understanding the conditions that help a child to learn most productively in these three areas. We must provide a balanced education—social, emotional, moral, physical and cognitive—in all areas *to ensure the development of the whole child.* All areas of development are related to and dependent on one another, and are of equal importance in development. The student whose needs have been met adequately in all domains is more likely to develop into a healthy, responsible and secure adult. The meeting of these needs in an integrated manner in schools contributes to the total development of children.

The next section looks at the relationships among the domains in the development of language.

THE DEVELOPMENT OF LANGUAGE

Learning language is an astonishingly complex task that the majority of children accomplish with ease. If one thinks about how much must be learned (as adults sometimes do when learning a second language), it is easy to be surprised that children learn language at all, much less so quickly and at such a young age. There has been a long debate in scholarly circles about whether children learn language by imitating what is heard and being praised for it, as the behaviourists argue, or because they have a built-in "language acquisition device," as nativists such as Noam Chomsky have argued.

The behaviourists believe that language is learned when a child hears a word or sentence, repeats it and receives some reward for the repetition. In this model, children might even learn words for which they do not know the meanings. The reward for learning language might be a parent's smile or perhaps a cookie the child wanted. This view does not explain how children say new things, such as sentences they have never heard before, or how they overgeneralize rules of grammar. "See Momma, I drinked my milk!" These usages are typical of young children. In this example, when they learn that past tenses are formed by adding "ed" to verbs, they overgeneralize the rule, and apply it to irregular verbs. This can happen even when they formerly used the correct irregular form, such as "drank."

Nativists believe that language is biological, in the sense that human beings are innately equipped to learn language. Research indicates that all children utter the same 80 sounds in their initial efforts to communicate. This is evident in all cultures and even in babies who are born deaf. This helps to explain why small children are able to learn the intricate system that is language.

Current thinking combines these two positions. Clearly, human beings are able to learn one or more languages. Also, children do not learn language in the absence of models of language. Severely deprived or abused children who never hear caregivers speak, do not learn to speak. Whether they are later capable of learning a language seems to be dependent on the length and depth of the deprivation. Children deprived of hearing

language, but not of human contact and bonding, can later learn normal language. Without the affective component, though, language has not normally been learned.

So, in language learning and development children not only use their physical (biological) and cognitive (intellectual) capacities, but they also need emotional (affective) support. Language learning is one very basic area of development that relies on the integration of the domains for its success.

LEARNING ORAL LANGUAGE: THE YEARS FROM BIRTH TO SIX

No child ever learned language without someone from whom to learn it. Parents speak to their children from the moment of birth, at least. They tell their babies how sweet and lovable they are, and name things for their children. Babies listen, and in their first year of life begin their language development by babbling and cooing. Even deaf babies do this. It is easy to forget that speech, the oral production of language, is also a motor skill. In babbling, babies are practising the movement patterns required for speech. They delight in their sound-making. So, language development begins early in infancy, before babies speak, and is fostered by the very caregivers who are also teaching the baby fundamental lessons in emotional development and social interaction.

Babies soon come to understand that sounds carry meaning. They understand some words in the first year of life. From this, babies progress to saying single words. They may say, "Ma Ma," "Da Da," or "mik" (milk). "Mik" may mean all of "Please give me some milk right now!" Adults will simplify their language when interacting with infants and toddlers. For example, they will use names rather than first- and second-person pronouns ("Momma pick Jamie up"). Parents encourage language development by talking to their children in a variety of situations, even during diapering. Parents have special ways of responding. They treat their children's talk as meaningful and respond to it this way. Researchers who study children learning language even have a term for the typical ways in which parents talk to their infants: it is called *Motherese*.

In the second year of life, toddlers imitate their caregivers, modelling not only the words and phrases they hear, but also the intonations, gestures and manner of speech. Children begin to string two words together, in "telegraphic" speech. "Momma come," a child might say, meaning "Momma come over here." Caregivers who attend to what children mean (or are trying to mean) are best helping the children to learn language. They are also setting the stage for later language growth, where emphasis should also be on meaning.

Children depend on what they can do with the language. They learn language because it accomplishes something, or fulfils a function

for them. Hence, children learn language actively, to do things like meet a need ("Want juice."), regulate others' behaviour ("Read 'gain!"), establish social relations ("Hi!") express ideas and feelings ("Don't want to!"), express their imaginations ("Me fly?"), gain information ("Go store?") and share ("Look, Dadda.").

In their third year, children expand their telegraphic language into more complex and standard forms. They may be able to use about 1,000 words. They begin to use many words to describe one idea or one object. Glazer (1989, p. 18) gives an instance of a two-year, eleven-month-old girl describing her stuffed bear with "He cuddly, he cute, he brown, he soft." In the next year, children expand their sentences to include pronouns, adjectives and adverbs. They can use possessives and plurals. Caregivers respond to children learning language by answering their questions, asking questions and calling children's attention to things of interest. Sensitive caregivers attend to children's interests and topics, elaborating on what children initiate, as well as initiating topics for children.

In the preschool years, children describe what they are doing, as they do it. This is referred to as "egocentric speech." Children are not concerned about whether anyone else is present or listening when they speak in this way. They may be playing with language, or may be seeming to provide a commentary or to direct themselves through what they are saying. Vygotsky (1962) believed that this speech was a stage in the development of thinking. Children first learn language to communicate, for social purposes, and then gradually come to use it as a representation system for their own thought. Egocentric speech is a middle stage in which language is beginning to be used to help the child organize thought. This kind of speech declines around the age of six, becoming "inner speech," that little voice one hears in one's head when thinking through something hard. It's the "Now, let's try it this way," one sometimes says to oneself or out loud, as one begins to realize how big the problem really is. This process is sometimes called metacognition, a skill that is discussed in more detail in *Teaching Thinking: Enhancing Learning* (Alberta Education, 1990).

If caregivers have dealt with the child positively, the child will begin to describe what happens to them and to others positively. For example, a little girl who had been trying to do a simple puzzle on her own finally completed it correctly, and said to her mother, "Look, I did a good job!" Such a child, whose self-talk is positive, has come to believe in her own self-worth through her actions, but also through the words her caregivers have addressed to her. A child who has been dealt with negatively will reflect this in the language she uses to describe her actions and feelings. In this way, language and self-worth are inextricably woven together. Because children

model the language that they hear, their sense of self and their cultural identity include, at a very fundamental level, the language that they speak.

By the time children go to school, they are already part of a "speech community," a group of people that includes their family, friends and associates, the people they and their families interact with daily. A community is "the people in my neighbourhood," (as Sesame Street or Mr. Rogers would be inclined to say). Children's speech and the pragmatic ways they use their language will reflect what is appropriate to their speech community. Thus, if the only formal speech they hear is in church, then that will tend to be the only place where they use that more formal kind of speech. If adults may normally be interrupted at any time by children in their community, then the children will think nothing of interrupting the teacher when they get to school.

A child from a speech community that expresses commands directly ("Clear away the toys now") might misunderstand if the commands are couched indirectly ("Who would like to tidy up the blocks?"). The child may perceive a choice where none is intended. If the adult giving indirect commands then perceives the child to be willful or rude, a social and behavioural judgment is based on a linguistic misunderstanding.

As stated in the *Language Learning Program of Studies* (Alberta Education, 1990) "Language learning builds upon what children already know and can do. . . . Each child has a distinctive and unique cultural, linguistic and socio-economic background."

It is vital for teachers to understand the diverse speech communities of the children in their classes. Children of different ethnic backgrounds may come from functionally different speech communities, even though they live in the same area. On the other hand, children who look different because they come from different ethnic groups, may share a speech community. In a society with such diversity as Alberta's, with an indigenous population, long-term residents, old and new immigrants, we cannot afford to assume that children coming to school share a common speech community.

LEARNING ORAL LANGUAGE: THE YEARS FROM SIX ON

In the school years, children continue to develop their language skills in four ways:

- language structure (especially semantics and syntax)
- language use (a variety of functions and situations)
- metalanguage (the ability to talk about language)
- language as an independent symbol system (decontextualizing language).

By the age of six, children have learned most (but not all) of the syntax of their mother tongue. They may know in excess of 3,000 words. Their language forms approach adult usage. Some fine points of grammar, though, are still to be learned during the elementary years. For example, the ability to distinguish who is washing dishes in the following two cases is normally learned around nine years of age.

- John told Jeremy to wash the dishes.
- John promised Jeremy to wash the dishes.

The second sentence is harder to understand. The two forms superficially look the same (subject-verb-object), but in fact a different person is expected to carry out the action in the two cases.

By the end of the primary years, children may know from 8,000 to more than 20,000 words. They have learned a great deal more about language than numbers of words, though. They have learned how language is used in their speech community. Children can distinguish, for example, the typical speech patterns of the males and females in their community. They will understand that polite forms differ from commands.

In elementary school, children widen the circle of people with whom they interact and come into contact. This provides them with a greater number and variety of language models. In addition, children now communicate with people who may not have as many shared meanings with them as did the people in their own families. This can help them express themselves with more clarity and completeness. Oral language still provides a basis for learning in all the subject areas in the elementary years. Learning is facilitated when children are able to discuss topics with the teacher and each other.

During the elementary years, children begin the process of learning to talk about language. For example, an 11-year-old child can identify the following sentence as ungrammatical, by saying it is "not OK."

> Jane went to school but her mother went to the school.

A young child might indicate that mothers don't go to school, focusing on the meaning rather than the form. This ability to understand and talk about language form should not be confused with the ability to use language. Teaching young children metalanguage such as nouns, verbs, adverbs and gerunds, will not improve their ability to communicate. It is a separate skill, with its own purposes and place.

As children develop, they become more able to deal with objects and events outside the immediate context. The same is true of language, which is to a degree reflective of their thinking. Students become able to discuss things that are in the distant past, or might be in the future. They become more able to use language for abstract purposes, such as considering hypothetical situations ("Suppose you could alter one law, which would it be and what would be the effects of the alteration?").

Children will continue to expand the ways they use language (the functions for which they use it) and their understanding of the pragmatics of language use in the schooling years. By junior and senior high school, students are ready to learn more formal speaking forms, such as debating and speech making. In the secondary years, and indeed throughout life, discussion among peers can facilitate and enrich learning.

LANGUAGE AND THOUGHT

Language is a major symbol system, universally used to represent the content and processes of thinking. Other ways to represent thoughts include (but are not limited to) play, visual art, music, dance and mathematics (with its charts, graphs and formulas). Language is a significant means of embodying both what we think about (the content), and the ways we think about it (the processes). Language, in essence, holds up a mirror to thought.

Thought begins before language in some sense: infants think before they talk (but not before they feel emotions). In the sensori-motor period, infants' thoughts are represented by actions. With the development of language in the pre-operational stage of thinking, children's language can outstrip their logic. A three-year-old might say to her mother, for example, "Have a good day!" The child might do this appropriately, in the morning when the mother goes to work, but also inappropriately, when the mother is going to work for an hour or two in the evening. It is then apparent that the child has used the phrase as a formula, as something one says to someone going to work. This child has clearly not understood the time element involved in the standard phrase. It is the social aspect of wishing well to the person who is leaving that has been learned as significant. Similarly, concrete operational students will use "if, then" sentences for situations with immediate consequences long before they develop the abstract thinking

ability to understand and use truly hypothetical thinking.

For the young unilingual child, there is a necessary connection between the symbol—the word—and the concrete reality for which it stands. This connection is fostered through the heavy contextualization of language use in the early years. Language in these years is embedded in the context of the situation. For example, a primary teacher may teach about "The Family" through reference to the children's actual families. However, schooling is a process of increasing decontextualization of both language and learning. Through the grade levels, language is more and more often used to represent ideas removed from students' immediate experience. Learning to read and write begins this process because it lifts language out of the "here and now" more than spoken language is likely to do.

Language handles many aspects of thought well. Written language allows us to manage and organize more information than we could readily handle through spoken language alone. Hence, language, and especially written language, is often taken to be an example of a person's thought. While we must guard against forgetting the many other modalities in which thought can be expressed, language is emphasized in schools. Much mediation, or explanation, by teachers is verbal. Students' responses and interactions are mostly verbal. The higher the curriculum level, the more students are required to express their understanding in written language, and too often in an increasingly narrow range of written language functions.

CONDITIONS THAT FACILITATE LANGUAGE LEARNING

Adults assist children's language development through **direct instruction**, such as when a parent says to a child, "Say 'please' if you want me to get it for you." Adults clearly also **model** language for children. In addition, adults provide **scaffolding** for children in learning to use language. For instance, at the end of the day, a parent might assist his child in telling about a trip to the zoo by repeatedly asking guiding questions such as, "And then what did you do?" This helps the child understand how narrative is sequenced chronologically. In studying language, researchers have looked for general ways in which children's language learning is facilitated. These can be summarized under four broad principles, though undoubtedly others will be discovered.

1. **The environment should provide for variety and diversity in non-verbal and verbal experiences.**

   Language is learned in the presence of worthwhile content. To talk, one has to have something to talk about. A variety of experiences provides a wealth of materials for discussion and understanding. Following up on those experiences provides teachers with a great deal of practical material on which to base a learning activity.

2. **The environment should be tailored to take advantage of children's natural language learning.**

   Children's language development is a continuous part of their cognitive growth. A pre-operational child of three or four has difficulty with propositions couched in hypothetical terms. ("If you do not eat your vegetables and meat, you will not grow properly because you won't have the proper nutrients.") At this stage children's understanding relates to what they can see, touch, hear, smell or taste. They are tied to the concrete. Hence an understanding of students' cognitive development can help us understand their language development.

3. **The environment should challenge children to grow through experimenting and risk taking.**

   One way teachers can do this is by listening to students as they try to explain phenomena in the classroom. Where teachers ask open-ended questions and clarify and extend students' answers, this principle is used.

4. **The environment should focus on meaning rather than on form.**

   In language learning, as in all learning, students are active in developing an understanding of the physical and social world that surrounds them. Thus, a focus on meaning encourages their active construction of understanding. It is a little like learning to ride a bicycle, play chess or use a computer. You have to do it to learn it. The learning comes through the using. As the *Language Learning Program of Studies* (Alberta Education, 1990 draft) says: "Language learning is an active process of exploring, constructing and communicating meaning."

   In focusing on meaning, five subprinciples can help teachers maximize student learning.

   a. Memorizing definitions of verbal terms is not the same as understanding. Students who memorize what they do not care to talk about, are not engaged in language learning.

b. Writing about language is not the same as using language. As with other learning, students learn by doing. Students may complete worksheets on such grammatical terms as "noun determiners," but this is not useful in expanding their use of language. But talking about how strong verbs and nouns strengthen communication is useful!

c. Simple-to-complex sequencing of language forms is not the way language is used. Generally, students use new forms to express familiar meanings, or they use familiar forms to grapple with new meanings. The intentions, sender, receiver, purpose and context of a message determine the appropriate language form.

d. Contrived situations are not the same as real ones. The level of students' language in real situations exceeds that of contrived situations. The key is the level of student involvement in the activity, which is often determined by its relevance to the students' lives.

e. Staged performances are not the same as interactions. The work students do in creating, planning, problem solving, and designing performances of their interactions, is where the real learning is done, although the performance itself may be the motivational outcome.

Alberta Education language arts curriculum documents have recognized these principles for many years. For example, the *Elementary Language Arts Curriculum Guide* (1985) says that concrete materials and real experiences are rich in meaning for young children and basic to learning language.

"Through talk the students learn to organize their environment, interpret their experiences and communicate with others. As they mature they continue to use talk for these purposes as well as to check their understandings against those of others and to build up an objective view of reality."

The *Junior High Language Arts Curriculum Guide* (1987) states that the curriculum is "built on the philosophy that students learn language through active use in an integrated manner . . . students extend their language ability through opportunities to use language in speaking, writing, reading and listening.

Their tacit knowledge of grammar . . . enables junior high students to produce and understand sentences that contain grammatical complexities that are far beyond their capacity to grasp or explain as theory."

LEARNING WRITTEN LANGUAGE: READING

When is the best time to begin reading to children? When they are old enough to chew the book!

Seriously, recent research has shown how much learning about reading and writing children do before they begin learning to read and write. Learning to read and write is similar to learning to speak and understand: both are social acts. Children learn oral language to communicate with people they care about and who care about them. In the same way, learning to read and to write begins as a social act, with functions appropriate to being literate. Most children come to school with a great deal of knowledge about written language, even if they do not already read and write. Furthermore, recent research shows that learning to read and write are integrated processes, and so this work is now usually referred to as "emergent literacy."

Children who are read to from infancy go through stages in learning about books and reading. Initially, the baby will look at each picture individually, and the person reading the book will point to and name the pictures for the baby. This may progress to the baby pointing to pictures and the parent naming the objects. Eventually the parent will point to a picture and ask the child to name the object. If the child doesn't do so, the parent will supply the name.

After much reading (and re-reading of favourite books), children begin to realize that each page is not separate. They develop a sense of story. At this point, children still tell the story in language that sounds like oral language, with a storytelling intonation, but they soon develop a sense of "written language." That is, in telling the story, they realize that it should sound different (have a reading intonation) than if someone was merely telling, rather than reading, a story. They may begin with "Once upon a time. . . ." Parents engage in "book talk" with their children, using words like "line," "page," "picture" and "word." They teach their children the language of literacy.

In the next step, children begin to watch the print, rather than the pictures on the page. They have realized what part of the page carries the story. Then children begin to read and gradually develop the many strategies that characterize the fluent and independent reader.

In learning about print, children focus first on meaning, and the functions of print in the environment. All children, it seems to many parents, learn to recognize the stylized "M" of

McDonald's. Next children attend to form, or the letters in print, so they begin to develop a first-letter strategy, noticing what letter their name begins with, perhaps. After this they begin to co-ordinate the function and the form. Only at this third stage are children ready to engage in word analysis, such as noticing the similarities in words such as Michael, Mom and McDonald's.

If children have many experiences in their homes and communities with reading, writing and print, then they may be able to begin to analyse words in their first year (at school). Other children, however, may need to go through these earlier stages in the classroom before they are ready to notice any similarities in word groups.

As adults who are familiar with books, we do not focus on the many things small children must learn about them. Consider the child presented with a picture book for the first time. An adult tells you that this two-dimensional object is a cat. It looks very little like what you have come to know as the household cat, which is three-dimensional, fluffy, makes noise, does not like to stay too near you, perhaps, and is black rather than the ginger colour in the book. How do you reconcile these discrepancies?

In fact, a child learns a variety of things about books by being read to in the preschool years, such as the items in this list, adapted slightly from Snow and Ninio.

- Books are to be read, not manipulated (or chewed).
- Pictures are not things in themselves, they are representations of things.
- Pictures are for naming.
- Pictures, though static, can represent events.
- In book reading, the book is in control, and the reader is led through the pictures, and later through the story.
- Books constitute an autonomous and fictional world.
- Book events occur outside real time.

Sitting in someone's lap and "learning to read" is a highly significant process in developing a child's capacity for literacy. The child learns that literacy is a significant and important process to the people who love and are loved by the child. Thus, just as emotional bonding affects the language development of the child, so the modelling and interaction around reading (and writing) affect the child's growing sense of what is important in that child's family and community.

The questioning process engaged in by child and adult in early storybook reading teaches the child the principles mentioned above, and probably much more. A child can learn that reading requires an active approach to understand the story fully. When the child's parents call attention to episodes or characters from books outside the reading of the book, they are affirming the importance of literacy. For example, a parent may point out a poster in a store that illustrates a book with which the child is familiar. Or, the parent may compare an event to something that happened in a story they read together.

In fact, the large number of books now available to help children deal with traumatic events, such as illness or death, depend on the principle that children can learn from stories and books.

The caregiver's readings, explanations and questions help the child come to an understanding of what this reading business is, exactly. They provide the "scaffolding" or assistance so that the child grows to understand what a competent reader does in reading text. So it is essential that teachers continue to read to, and with, their students, providing for cognitive, social and physical interaction.

LEARNING WRITTEN LANGUAGE: WRITING

Just as a child learns to read through observing and interacting with others, so the same is true of writing. Vygotsky, as early as the 1930s, decried the view of writing as a motor skill rather than as a complex cultural activity. He felt that writing should be meaningful, taught through children's intrinsic needs and incorporated into tasks that were needed by children and relevant to them. His examination of children's development led him to conclude that the development of writing skills traced a path from infants' use of gestures through oral language used in play, to eventually using written marks to signify (be signs for) meaning.

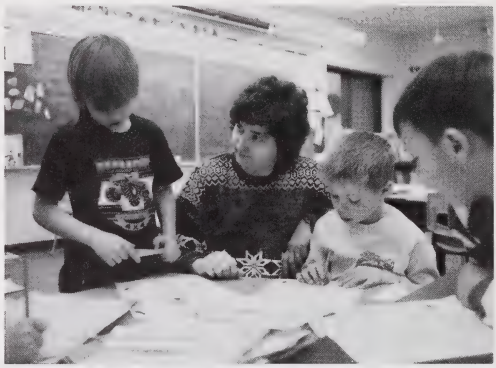
More constraints may be placed on young children as they learn to write than are put on them as they learn to read. A caregiver is likely to regard reading as something that can be done nearly anywhere, but writing anywhere, such as on walls, is generally frowned on. Furthermore, children's fine motor skills may determine how laborious a process accurate letter formation really is for them. Physical skills are needed for writing!

Children who see people writing will soon ask for a pen or pencil and paper for writing themselves. Initially, they simply "scribble," but researchers who have studied children's scrawls note that over time they more and

more approach written script. While still at the "scribble stage," Arabic and English children's "writing" can be told apart. The different features of the written script in their environment have already been noted by the children and they know this writing is different from drawing.

Children move from "scribbles" to using a single letter to represent an entire syllable, word or phrase. Next come sequences of letters. Children may mix these stages, depending on what they want to write. Children must also learn that the space between words is a significant part of writing. From strings of letters, children will move to understanding in a rough sense that each letter represents a sound, and that they may make this representation exactly. For example, most Albertans say the name of one of our mountain towns as though it were spelled "Bampf" (Banff), and children may spell it as they really hear the word said. At this stage, it is quite legitimate for children to "invent" their spellings of words. With the experience of reading, and an attention to spelling when it is needed at the final draft or "publishing" stage, however, children will move to developing standard spelling patterns.

Writing is an act of composition that requires motor skills. As with reading (where small muscles control eye movement), writing well requires co-ordination of the cognitive aspects (what I want to write) with the physical aspects (how hard is it for me to do this). If too much attention is taken up with fine motor tasks, it will be difficult to have enough attentional capacity left for the cognitive act. A student who must struggle with this dilemma is likely to come to dislike having to write. That student will avoid the task or develop a lean and pithy style in writing to get finished as quickly as possible. A requirement for several drafts is not a pleasing scenario for such a student. This reminds us of one more instance in which all three domains have an effect on what and how well the student will do in the classroom.



Competent readers and writers approach text with an understanding of how stories progress. This understanding about most stories, and their knowledge that they must be active in coming to understand a story, allows them to anticipate what is to come in their reading. Good readers use this "frame" to monitor their progress, to keep track of whether they are understanding the story as they should. To guide their understanding, they link what happens in the story to what they already know, their prior experience. If this experience includes information relevant to the story, and

if the text structure is what they are expecting, they are more likely to understand it.

Writing, as with reading, is a dynamic and interactive process. We write a bit, then we may go back and revise a section before carrying on. As we write, we predict or plan what might come next, and continue writing to find out. We test the information against what we already know, and what we have predicted. It is important to provide opportunities for writers to interact, and be involved in planning, evaluating and revising their work, and the work of their peers.

RESPONSE TO LITERATURE

Students read various kinds of written language in school. Especially at younger levels, children tend to learn to read narrative language. As they move through the grades, they read more and more expository language, though their English classes always include the reading (if not the writing) of narratives. It is in this reading of narratives, in responding to and reflecting on literature, that we see one of the clearest examples of the inter-relationship of the domains. Children relate what they have learned from their own social and emotional experiences to the content of the literature they are reading.

Students of equivalent reading skills can differ tremendously in their desire to read. The difference in the desire to read can lead to different amounts of time spent reading. This means that different students will get different amounts of practice in reading, which ultimately can lead to different skill levels and background knowledge in later years. What is characteristic of students who like to read? They like reading because of its association with warmth, closeness and shared emotion. They have been read to from birth! Reading is liked because it has been done with people who are liked.

The importance of reading to children early in life does not negate school's effect on helping students to come to love reading and writing. It does show that to engender positive attitudes to written language, schools must view students as whole beings who feel as well as think during learning. Reading literature is an emotional, as well as a cognitive experience. Many of the practices of effective teaching rely on techniques that implicitly take this into account. For example, the choral reading from big books allows children to practise reading in a non-threatening way. They can see and imitate the best practices of other students and the teacher, and feel competent as they do so. This increases their motivation to continue to learn to read and write.

Reading good literature is rewarding for students. It:

- practises reading skills
- develops a fund of background knowledge, a cultural literacy

- reinforces narrative as a way of knowing and thinking
- develops imaginative, creative and insightful thinking
- develops students' ability to learn incidentally and vicariously
- develops students' understanding of the variations and commonalities of human behaviour
- provides enjoyment.

Besides reading literature, analysing and evaluating it, the instruction process in schools also includes the use of literature as a springboard to creative processes. Teachers can help students develop an awareness and use of productive strategies for creative thought and exploration.

Literature stands at the intersection of personal and interpersonal, or social worlds; it describes and embodies social and personal realities, while allowing the individual to establish personal meanings and relationships. Responding to literature requires an active construction of meaning by the reader. To do this, the reader must employ background knowledge, cognitive strategies and an effort to establish meaning and significance.

EMERGENT LITERACY

The development of oral language, reading and writing, as discussed above, all contribute to the emerging literacy of the student.

In the 1990s politicians, journalists and others, the world over, are attempting to analyse, measure and improve levels of literacy. All parties recognize the important role of educators in continuing efforts to encourage and enhance literacy development.

In a British study, Nigel Hall (1987) says that teachers should examine their practices to see if they help students understand what literacy is. To create an environment where literacy, in all its aspects, can emerge and thrive, Hall suggests that educators should:

- help students understand that literacy is about creating and communicating meaning
- help students see that people engage in literacy activities because they are important and useful
- help students recognize that literacy is a means to many ends, serving a wide range of real purposes

- help students understand that literacy activities are pleasurable, because they help satisfy a variety of personal needs
- help students appreciate that their current literacy achievements are important and valued
- provide frequent opportunities for engaging and experimenting in purposeful literacy activities
- provide activities involving the authentic use of literacy and
- provide for discussion of and reflection on literacy performance.

These suggestions emphasize the social and affective nature of literacy. We must create such contexts, in curricula and classrooms, as we help students develop the cognitive and physical skills involved in speaking, reading and writing.

The next chapter addresses the issue of ensuring that all students are motivated to be actively involved in learning.

MOTIVATION

Motivation was originally conceived of in terms of the affective—if you liked something, you would keep working at it. Then researchers took a more cognitive view—if you understood something, you would keep working at it. Now researchers focus on the interactive nature of the social/affective and the cognitive domains in motivation. When students learn comprehensive thinking skills, for example, they develop a view of themselves as more able to control the outcomes of events, through a more internal locus of control. The rewards are more than intellectual, they are social and emotional.

We cannot separate achievement from a student's willingness to pay attention and participate in the learning task. Learning relates to how committed the learner is. "This willingness to act and eagerness to leap into learning is what we call motivation," say Oakes and Lipton (1990).

Educators sometimes distinguish between extrinsic motivation, which comes from outside the learner, and intrinsic motivation, which is generated internally. Rewards and punishments provide extrinsic motivation, but these alone are not enough to influence students' behaviour. Cognitive psychologists emphasize intrinsic motivation—an inner tension that gives students the drive to work hard. Achievement increases when students succeed as a result of their own efforts.

Instructional activities should help students become willing to work hard. Learners need to take charge of their own learning, to plan strategies and to connect what they do with what they learn. As students see themselves as increasingly capable, they are motivated to learn even more. Also, as they mature, they get help from other students and adults, and offer help too. Students begin to rely on such co-operative efforts. Educators must treat knowledge as cognitively rich, interrelated, connecting to the learner's individual perceptual strengths and life experiences, and requiring social and interactive learning processes.

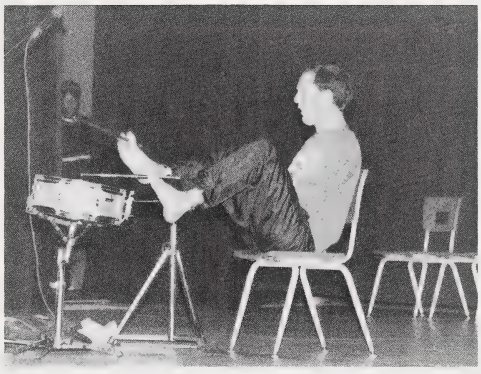
The *Integrated Occupational Program: Information Manual* (Alberta Education, 1989) states that the use of effective teaching strategies can lead to positive motivational changes in students. Strategies such as peer teaching, individualized instruction, teaching thinking and study skills, using audio-visual aids, providing demonstrations and field trips, encourage:

- increased curiosity about objects and events
- increased attention span and time on task
- readiness to cope with more difficult tasks
- decrease in absenteeism
- settling down to work more rapidly
- spontaneous checking of own work
- responsibility for own work, supplies and equipment.

The literature on effective teaching is extensive. Margaret Clifford (1990) suggests four motivational teaching strategies, based on a review of research.

- Provide students with a moderate probability of success, but not synthetic success, not error-proof learning environments.
- Remove external constraints such as rewards, threats, bribes and surveillance.
- Provide prompt, specific, informative feedback to students.
- Encourage and moderate students' risk taking and choice of challenging tasks, by making the probabilities of success clear and discussing the payoffs for different choices.

Oakes and Lipton (1990) describe an effective strategy used in a Grade 9 Language Arts class where students worked together in groups of four. They each read *To Kill a Mockingbird*, a cognitively demanding task. They viewed a movie version, if they wished, during the lunch hour. Each group member then adopted a particular character to follow and wrote a short essay describing the character and situation. The students exchanged ideas with members of other groups selecting the same characters. A longer group composition explored the themes in the book through examining four characters. The interaction of the students was intense. Finally, each student chose a conflict at their school that concerned them and wrote a dialogue placing their selected character from the novel in the centre of the school conflict. Skits were performed and assigned group grades by the teacher. The students were enthusiastic and motivated to work harder than usual. The nature of the individual and group activities and their relation to life experiences in the school, made this a motivating assignment for the students.



We all have strong personal, social and cognitive needs to be willing participants in whatever we do. Most young children have natural curiosity and a willingness to learn. As students grow and mature we must support and encourage them to remain active and committed. Readers can refer to the document *Teaching Thinking: Enhancing Learning* (Alberta Education, 1990), to find many other effective strategies.

ACHIEVEMENT MOTIVATION

Being motivated to learn something means that you have some feelings and beliefs about learning it, you can use some cognitive strategies to learn it and that perhaps you have some awareness of your feelings and strategies. As many adults know, each arena of endeavour may generate different levels of motivation. You can be motivated to learn to read and to draw, but not to do mathematics or athletics, for example.

The achievement motivation research of Carol Dweck and her associates (1983) tries to explain how and why students pursue learning activities. Generally, they have two kinds of goals.

Learning Goals:
The student seeks to understand something or master some skill or become more competent.

Performance Goals:
The student seeks to have others think well (or at least not think badly) of them.

Students with learning goals tend to choose tasks that challenge them. Whether or not they see themselves as having high ability, they try in order to see what can be learned. Choosing challenging tasks and trying hard are precisely the strategies most likely to help students learn. On the other hand, students with performance goals want to look good. Therefore, they will choose either very easy tasks, to ensure they perform well, or very difficult tasks, so it is clear they could not have succeeded. Only when absolutely convinced that they will be successful, will students with performance goals try the more difficult tasks that lead to greater learning.

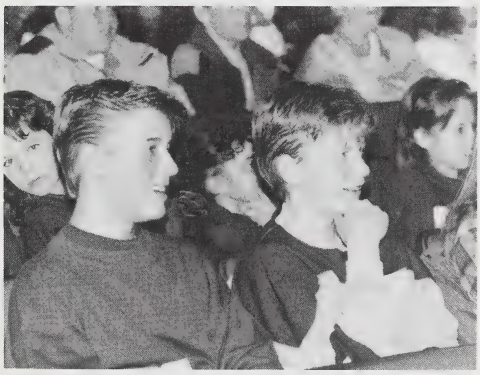
When confronted with the difficult part of a task, students with learning goals will increase their efforts, or examine their strategies in order to continue. This may actually mean they do better in the face of obstacles. Students with performance goals, on the other hand, will stop trying. Students with learning goals tend to attribute their success to their effort and the strategies they have used. Their pride in their performance results from the amount of effort they feel they have exerted. Students with performance goals attribute success to their ability. These students are proud of themselves in relation to their ability, and at times, their luck.

This is significant, because if you view success as related to effort, you can increase your effort to be successful in learning. If, however, you view success as related to the static amount of ability you have, then you can do little but give up when the going gets rough. Students with learning goals believe their ability to be incremental; that is, through effort and acquisition of more and better strategies, you can improve your intelligence. In contrast, students with performance goals believe that intelligence is fixed; you are born with a

certain amount of ability, like a load of bricks, and you cannot add more bricks to the pile.

Furthermore, students with learning goals, whether or not they have high pretest scores, do more and better work on transfer tasks and produce more rule-generated answers, even when not completely correct. All of this indicates that they are more actively involved with learning than are the performance oriented students.

Learning or performance orientations better predict students' confidence in succeeding at new tasks than does their actual competence.



Under comfortable, non-threatening conditions, most children can manage rather well. However, under the threat of evaluation, highly anxious children take on a performance goal orientation. Under actual difficulty or failure, children who see themselves as generally helpless (learned helplessness) take on the performance goal orientation. If the negative experiences are highly salient, young children take on a performance goal orientation. If there is a combination of these conditions, few children will exhibit the mastery oriented, learning goal pattern.

In numerous experiments, children's orientation to one or the other type of goal can be changed. Perhaps as students enter and progress through adolescence and develop more stable and coherent views of themselves, their orientation to learning or performance goals also becomes more resistant to change. Adolescents' growing metacognitive abilities can allow them to learn new strategies, but may also inhibit their attempts to develop mastery in some areas.

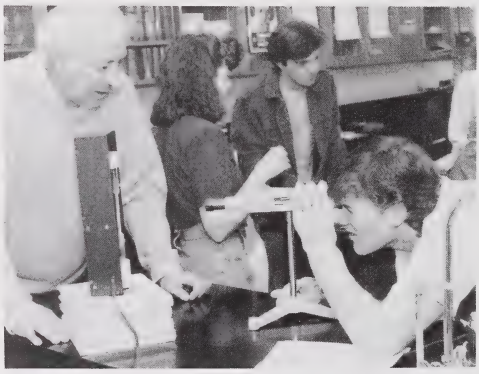
Students who are high achievers, who know they have done well in the past, do not necessarily develop a learning goal orientation. In particular, studies with high-achieving girls have shown they are more prone than boys of similar ability, to develop performance goal orientations.

These effects may not show up in elementary schools, where all students take the same courses. However, as students get into secondary schools, where they have some choice of courses, students with performance goals tend to take the less challenging courses, such as the easier mathematics and science courses. This, in turn, affects both what and how much the students learn. This may help to explain, for example, why studies show that the mathematical achievement of girls and boys is equal in the elementary years, but that boys pull ahead in the junior and senior high

years. If you have a performance goal, and mathematics looks challenging, you will tend to avoid it, *even when you have the same ability* to do it as another student. Gender differences in both mathematics achievement levels and motivational patterns are greatest among the brighter students. Of course, social pressures and conventions also contribute to gender differences in mathematics and science at the secondary level.

What implications does this motivational research hold for the teacher? Recall that learning is best fostered by tasks that are challenging, but of medium difficulty. On easy tasks, you already know the skills or knowledge, and on overly difficult ones you are too busy coping with the task to learn much from it. Therefore, if students, even those who seem to be of limited ability, are given only tasks that are very easy for them, they will not learn a great deal, nor will they develop a learning goal orientation. Similarly, general, non-specific praise ("Good work!") does not contribute to a productive, learning orientation. Research shows that in science classes at least, boys receive feedback on the intellectual nature of their answers, while girls get more social feedback than intellectual. This may also help girls and boys construe the purpose of learning in different terms.

Practices that promote achievement motivation do not foster completely error-free learning, but advocate the constructive examination of errors, a diagnostic approach to students' learning. ("You were doing just fine until this step in the procedure. What made you decide to do this next?") Programmed learning techniques, computer-assisted instruction and distance learning techniques must be carefully structured, with several pathways to challenge students at different levels. Also, students need to explore their errors so that they understand that learning is never an error-free process. Teachers should model strategies for detecting, analysing and correcting errors.



Students' achievement can be affected by what teachers expect of them. It may be that when teachers expect a lot from students, they give the students tasks that are at appropriate levels of challenge. If teachers also communicate an incremental view of intelligence to students, this can foster both adaptive motivational patterns, and greater learning.

DROPOUT PREVENTION

Ways to motivate potential dropouts to stay in school have been researched by Larry Brendo and his colleagues (1990). For this particular group of students, as with other groups, motivation comes from a combination of factors—cognitive, social, emotional, moral and physical. Potential dropouts will not usually stay in school for academic or social reasons alone.

Schools should "tap the young person's spirit of adventure, natural curiosity and need for a sense of purpose, through learning which is experimental, active, pattern-making and social" (Brendo 1990).

Crucial to this theory of motivating potential dropouts to stay in school, is the importance of letting the students serve others, rather than always being served. Young adults need to find meaning in their lives—without this personal motivation they will continue to drop out of school. Teachers can encourage students to discover this sense of meaning by providing them with:

- significance through belonging to a valued group (social)
- competence through opportunities to master knowledge and skills (cognitive, physical, social)
- power through allowing expression of independence and individuality (emotional)
- opportunities to serve others, to be virtuous (moral, emotional).

These motivating factors are basic components of self-esteem, which is discussed more fully in the next chapter.

SELF-IMAGE

"Individuals live and grow in a world that affects them physically, socially, emotionally, spiritually and intellectually. Positive, caring environments are essential for the development of a healthy self-concept that allows individuals to take charge of their own growth and the growth of the larger society through their personal contributions." (*Essential Concepts, Skills and Attitudes for Grade 12*, 2nd Draft, Alberta Education, 1987).

There are many ways to describe how children come to think about themselves. In this chapter we use the term **self-image** to describe how people view themselves globally. There are two parts to this image of the self: self-concept and self-esteem. **Self-concept** is people's theory or cognitive structure describing themselves. **Self-esteem** is how people feel about the self-concept. Do they like or dislike themselves? Do they feel like valuable people? How we come to see ourselves is largely dependent on our interactions with significant others, in particular, with those adults who have authority over us as young children. From their attention to us, their actions toward us and the words they use to us, we build our self-image.

Our self-image is part of our larger system of beliefs. It shapes our interpretation of all that we experience. We tend to accept events or comments that confirm our self-image, but ignore those that are not in accord with what we believe. Children are more changeable, perhaps because they have not yet formed a consistent self-image. Children's level of development will also affect whether their self-image integrates a number of aspects. In addition, it may be hard for young children and adolescents to form a stable physical self-image, because they are changing and people keeping telling them how much they have changed. ("My, I hardly recognized you, you've grown so much!")

When students begin school, their self-concepts are generally fairly concrete (in keeping with their cognitive growth). They think of themselves in terms that could be seen, perhaps through their actions, if someone was watching: strong, smart, tall or having lots of toys. As they get older, they begin to focus on character traits (respectful, courageous), emotions (happy, bubbly), emotional control

(can avoid fights) and on physical characteristics (tall/small). Still older students describe themselves through interpersonal traits such as friendly, loyal or shy. Older adolescents place emphasis on their emotions and attitudes. They also describe themselves through their wishes and secrets.

Young children have a rather global view of themselves ("I'm a good boy"). As they develop, their concept of themselves becomes increasingly differentiated. This means that they are able to see a number of things about themselves, each with its own place in describing the totality of their image of themselves ("I'm really good at math, but only OK in phys. ed.").

Eric Erikson (1950) noted that in adolescence, the students' developmental task is to establish a sense of self-identity, of who they are. They will try to do this so that there is some unity among the components of their self-image. Adolescents also seek to develop a sense of continuity in the ways they see themselves over time. Finally, they seek to bring into harmony their image of themselves and that which other people have of them. Also, they are doing this at the point in life (after infancy) when their bodies are going through the most change. It is this attempt to deal with all three of these dimensions at the same time that makes adolescents so preoccupied with themselves.

Furthermore, when adolescents develop formal operational thinking, they are able to construct a hypothetical or imaginary audience. Because of their preoccupation with their own identity, they may feel that the audience they themselves create is also preoccupied with their identity. Adolescents seek to understand themselves in relation to their families, peers and society.

Self-esteem has been linked to both school achievement and improvement in school achievement. It is interesting to think of some children as having taken in messages about intelligence as a fixed entity from significant people in their lives. Their self-esteem is then tied to how much intelligence they feel they have. Other children may believe in the message that intelligence is incremental. Their self-esteem is then tied to the effort they exert and what they are able to learn. In this way, self-esteem differs for students with different motivational patterns.

Certainly, in the development of self-esteem, a critical factor is that the child feels unconditional acceptance by the caregiver, usually the parent. The child's level of self-esteem is associated with the parent's level of esteem for and acceptance of the child.

Young children do not distinguish between the physical and cognitive domains in evaluating their skills. You can either do it, or you can't.

However, older children's judgments of their cognitive competence are based on three criteria:

- performance speed (the speed with which you do it)
- effort (how hard you try)
- authority evaluation (what parents and teachers tell you).

Judgments about the physical domain are also based on three criteria:

- peer selection (whether you are chosen for the team by peers)
- authority evaluation (what parents and teachers tell you)
- concrete ability and liking (how fast you learn the skills and rules, and how much you enjoy the activity).

Social judgments are based on two criteria:

- peer feedback (how do other children respond to you)
- personal attributes (friendliness, shyness, etc.).

When children enter school, move from ECS/elementary school to junior high, or junior high to senior high, changes in the environment and the demands on them, can bring accompanying changes in their evaluation of themselves. Early adolescents forced to cope with multiple, cumulative changes have particular difficulties.

Task demands change at each level of school, so a student who was able to cope at one level may have more or less difficulty at another level. Mathematics, for example, relies heavily on spatial skills in the elementary and even junior high grades. However, as algebra is introduced, logic skills become more significant. Students who have relatively weaker spatial skills, but excel in logic, may actually improve their performance when doing algebraic units in math. However, if they have already developed negative attitudes to the subject, they may not put in the effort required to realize that potential.

To feel that they can accomplish a task or skill, students use some or all of these four sources of information:

- feedback from what they have done
- observation of others' competent performance (modelling)
- verbal mediation
- calmness (strong emotions may lower the chance of succeeding).

In attempting a task, students may guide themselves with "inner speech." This inner speech can be used

- to monitor the task ("Oops, why isn't this going right?")
- to evaluate the task ("Oh, I didn't notice this word in the problem").
- to reward oneself appropriately ("Boy, it sure is good that I remembered to re-read the problem carefully!").

Students can be taught to use this type of guiding inner speech. It is especially effective for students who have not learned to use it productively on their own.

In fact, what students say about themselves is revealing of their self-image. Self-talk contributes to how you perceive yourself and how you interpret your perceptions. In an on-going way, it contributes to and reinforces your self-image.

SCHOOLING FOR SUCCESS

How students view themselves often depends on their cognitive, social and physical success. Parents and schools want students to be successful too. We want them to achieve, be comfortable with themselves, get along with others, contribute to their community and take wise risks. In short, we want students to grow into happy and productive citizens. In our rapidly changing world, it is imperative that we equip our students to understand and deal with change, the information explosion and the many interconnected global issues.

Alberta Education has listed the concepts, attitudes and skills students need to become autonomous and productive learners (Essential Concepts, Skills and Attitudes for Grade 12, 2nd Draft, 1987). This essential learning is incorporated into curricula to help ensure that all students have the opportunity to acquire it.

Michael Rutter (1983) has studied what makes some children resilient. Why do some children succeed despite difficulties that overcome some other children? Rutter feels that resilient children have a sense of self-esteem and self-efficacy. These children feel that they have some control over their lives and can affect the outcome of some events in their lives. Secondly, these children have at least one relationship that is positive, stable and secure. Children need support from those around them. Thirdly, resilient children become adaptable. They learn to cope with change from positive experiences of change. David Elkind (1986) likes to say, "The best preparation for a bad experience is a good experience." So, for example, children who have had a good experience sleeping over at grandmother's have less trouble dealing with their first hospital stay. Fourthly, children need experience in social problem solving. Many parents do this through mediation with their children. ("I know your brother made you mad. But what could you have done besides hitting him?") Every day our interaction with students involves us in their cognitive, social and physical worlds, as we support them in achieving curriculum expectations and standards. How can our classrooms do this best?

CLASSROOMS THAT INVITE STUDENTS

Children need to feel that they are loved, and that people really care about what they do. Students are very astute in reading teachers' feelings about them. From photographs of teachers interacting with students, 80 per cent of students nine or older can identify the teacher's affect. They know, for example, that the teacher is waiting for everyone to be quiet. They do even better when they can hear the voice tone as well. Teachers who develop rapport with students care about their charges, and the students know this. Teachers who care enough may even hound students for their assignments, knowing it will mean more marking.

The classroom environment should be supportive to students so that they will be willing (an emotional response) to examine their own ideas about how something is structured or works (a cognitive act). For example, to understand inertia, students may need to discuss and reflect on their own experiences of cars starting to move, and

experiment by crashing models of cars. If the classroom is threatening, why would students want to try to explain how they think inertia works?

A supportive classroom environment is one in which students and teacher have established productive working agreements. These classes get down to work quickly because time was spent learning routines and establishing rules early in the year or semester. Transitions from one activity to another occur quickly and students settle down to the next activity. These working agreements develop through the trust and common understanding that the students share with the teacher. Where teachers and students miss the subtle, tacit behavioural cues due to cultural or personal differences, that understanding may be harder to develop.

Situated in the context of a supportive classroom environment, the teacher can focus on clear instructional goals and allocate classroom time to those goals.

Students need tasks that are authentic or real. It is possible to get children to stretch beyond their developmental levels, such as teaching the "calendar ritual" to four-year-olds, or systems of grammar to concrete operational junior high students. However, such information is usually only memorized by rote and remains inert. It may damage the child's disposition to learn that subject. It could also harm students' faith in their own sense of efficacy, if they are told that they should learn something that they see as quite meaningless and feel they cannot learn.

All students need to feel that the adults who instruct them gain their authority through their greater experience, knowledge and wisdom. Teachers are models, who need to uphold the personal and professional qualities we would have the students emulate.

Students learn from teachers. This may seem obvious, but consider for a moment the implications. Teachers structure content and strategy learning for students. They provide regular reviews, call attention to main points and summarize parts of lessons. As a teacher, you soon find it is helpful to repeat yourself. Repetition aids learning. This "recursive structuring" provides the scaffolding for students to learn to structure information for themselves so that it is understood and retained.

Effective teachers vary their assignments for students, and have students work at appropriate levels of challenge. Students learn

to do their own follow-up on the quality and timelines of their assignments when teachers require it of them and check up on them for it. In essence, teachers model and explain successful work habits for students. Through these procedures, teachers are providing scaffolding for students to learn those skills.

Teachers' questioning techniques are critical to students' involvement in learning. Questions, like instructions, should be clear. Questioning should build from lower-level (knowledge and comprehension) to higher-level questions (application to evaluation). Lower-level questions and answers set the stage for higher-order questions. Questions should also allow sufficient time for students to think before responding.

It can be helpful to students when teachers state which part of their response is correct, and then allow them to try again to give the response. If a teacher moves too quickly onto the next student, the first student may not know that any part of the response was useful. It takes sensitivity to know when a student can improve a response and this is more likely to occur with open-ended questions. Identifying the correctness of answers is also helpful to other students in the class who may not have known the answer.

A key element to teachers' mediation is the type of feedback they give to students. Feedback must be regular and extensive. Specific comments about what is well done are most useful. For example, on an essay, a teacher may comment on word choice being appropriate to mood and topic, but also note throughout the essay which words contribute to this effect.

Instructional mediation, like mediation in general, rests on twin foundations: teachers interpret what they want to convey, and students construct their understanding. Every teacher has had the occasion to hear from a parent what the student interpreted from a lesson. Does it always match what was taught? Mediation in the classroom is interactive: it is like a ping-pong game between teacher and students or student and student. The serves are the questions, students' as well as teacher's, and the returns are the responses which in turn may elicit more questions or different responses.

Besides questioning, especially process questioning, teachers can mediate through bridging, or referring the material to the student's experience. Teachers can ask students to justify both correct and incorrect statements. This will allow the teacher to understand the student's reasoning to get that answer, and allow this reasoning to stand as a model for clarification or discussion for other students. Teachers can also help students understand and formulate rules (scientific as well as moral) and to recognize and use order, predictability, systems and strategies.

Mediation is longitudinal: it occurs over time. A teacher may ask comparison questions of a student who has difficulty comparing along one dimension. This student is not going to spontaneously compare across dimensions after a week's instruction. But with continued effort, and a teacher's patient questions week after week, the student will come to compare clearly. This now provides the student with a thinking skill that is widely applicable.

Classrooms are very complex places in social terms. The teacher has a relationship with each student, with each group of students and with the whole class. There are numerous relationships among the students in the class. In addition, teachers are expected to handle a number of roles in relation to the students. They teach, evaluate and sometimes provide front-line crisis intervention. The mandates allotted to the teacher are also varied, and are rarely spelled out explicitly. In this situation, all successful teachers know that there is a drive for activity flow in the classroom. The challenge is to keep students busy through their active engagement on meaningful tasks.

SCHOOLS THAT MAKE A DIFFERENCE

The school effectiveness literature from Canada, the United States and Great Britain has much to say to practising teachers and administrators. It would be impossible to summarize it all here so we will follow up some implications from what has already been touched on.

Clearly, schools need to deal with students' development in all domains. Some studies show that daily physical activity, for example, is beneficial for students' academic achievement. The students' better fitness may make them more alert in class and reduce absenteeism.

Schools need a constructive, positive climate in which to focus on academic tasks. Students should see some coherence throughout a school as they move from class to class or from subject to subject. This concept is embodied in the Program Continuity Policy, ECS to grade 6. Students learn more productively when they feel that they are able, capable, valuable and responsible. The part of a school that makes it a school are the people, and it is their interactions that make the difference.

That schools do make a difference has been amply demonstrated. For example, one British study followed girls who came from very disadvantaged circumstances. Only about one-third of the girls were capable, happy citizens in adult life. One of the factors that distinguished the successful girls from the less successful were positive experiences at school. Positive experiences at school included not only academic success, but also success in other endeavours, sports or music, for instance. It was also useful to have been given some particular responsibility or to have had a positive relationship with a teacher. These experiences helped the girls become planners.

Teachers must ensure that all students have some positive experiences at school.

Children also need to have multiple models, and to be provided with alternative ways to solve problems. Programs with conflict resolution strategies can be very effective when engaged in on a school-wide basis. The old one-room schoolhouse had variety in its favour, in the sense that each student starting school could see all the stages of schooling through which they would have to go. Older students could measure their progress concretely by the relative youth of the children starting school. In organizing a one-room school, the children had to co-operate for all to learn. Very often the older students helped the younger. These days, this would be called Peer Tutoring, Cross-Age Tutoring or Co-operative Learning.

As with Quality Circles in businesses, the teachers' involvement in goal setting and curriculum alignment in the school can pay many benefits. This is perhaps why the principal has been identified as such a key element in effective schools. Leadership is required in choosing valuable goals and encouraging teachers to build toward those goals.

Good schools invite involvement. The involvement of parents is an established practice in ECS and primary classrooms, but often falls off as students go through the grades to senior high school. Parent involvement can take many forms besides the traditional parent-teacher group. An effective way to help some children experiencing difficulty reading is to suggest that the family reads together at home. Simply the extra practice in reading and the idea that reading is significant enough for parents to spend time reading and listening can help children improve. Several other ideas on involving parents can be found in *Program Continuity: Elementary Education in Action* (Alberta Education, 1990).

TEXT THAT IS MEMORABLE

No set of curriculum materials can replace the teacher. However, good resources do contribute to student success. It is important for us to have excellent materials for students to use. They are an integral part of the teaching process, and students can learn much from them, but we need to build in the mediation component. For example, a small group of students learning co-operatively could very likely provide the motivation and cross-mediation to make distance learning materials very productive. In difficult professional programs at universities, good students

spontaneously form co-operative study groups to help each other learn. Why not use the technique deliberately? The benefits go beyond the cognitive and develop students' skills in being a "team player," a trait much sought by the business world.

Another possibility would be to use these distance learning materials to help teachers manage student learning at very different levels. The students would be working on their materials, but would always have the teacher readily available to help at difficult spots, give feedback and interpret new sections of information briefly.

All student materials should be examined to be sure that they contribute as much as possible to students' learning and retention. Instructional reading material that is understandable and memorable has been called "considerate text." The publishing industry discussed this with curriculum developers at the Alberta Education Publishers Conference in May 1990.

Considerate reading material is logically organized, and the organization is easy to identify. It includes clear headings, subheadings, introductions and summaries.

Paragraphs have an obvious main idea, often presented in the first sentence. Supporting details all relate to that main idea, and are predictably ordered (usually time, place and person).

Adding vivid, concrete examples and anecdotes with human interest help make the writing enjoyable. Wherever appropriate, the inclusion of human action and intention involves the reader in the content. Active verbs ("skyrocketed" rather than "increased") call to mind visual images that make the content memorable.

Vocabulary used should be concrete and familiar to students. New terms need to be identified by bolding or italics, explained and included in footnotes or glossary. A new term will not be learned the first time it is presented. Providing contextual clues to the term on the second and subsequent uses is also helpful.

Visuals (pictures, diagrams, charts, tables and maps) should be clearly related to the information presented in nearby text. Captions for these materials should be explanatory, not merely labelling. Obviously, it helps if visuals are clear, easily identifiable and attractive. Especially for younger

children, too much visual clutter on one set of pages is to be avoided. A variety of representational formats is helpful, particularly if there are also suggestions elsewhere for the teacher to teach the conventions and functions of those formats. It is useful on occasion to include the same information in two formats (for example, a chart and prose), so that students can see the differences in emphases that the different formats present.

Reference should be made to students' background knowledge and everyday experiences. Students will not automatically call up relevant background knowledge to aid them in their learning; the materials must explicitly build in this dimension. References to both general strategies and to subject strategies need to be explicit, especially for younger or lower ability students. Presentation of a strategy will not ensure it is learned by students. Exercises that aid the student in practising the strategies are needed. Guided practice is required for students to develop a strategic approach to learning.

Thematic presentation of information can aid students' learning from text because it reflects natural learning. Natural learning is the learning children do when they learn outside classroom settings. This does not imply that classroom learning is unnatural, only that it is consciously structured and in a specific setting. Natural learning is very heavily contextualized. It occurs in settings where the student can readily see a purpose for the learning. So, with thematic learning, there can be a rich setting with a variety of related information in which the student can see organization and a purpose for the learning.

During the writing or selection of instructional text it is important to consider these factors that help students learn, remember and be successful.

The next chapter reviews learning as an integrated activity.

LEARNING AS AN INTEGRATED ACTIVITY: ACKNOWLEDGING THE WHOLE CHILD

We all acknowledge that learning is a cognitive activity. Children and older students seek to understand the physical and social world around them. Learning is fundamentally a goal-directed activity. Therefore, one category of "things" to learn about is **knowledge**. This category includes concepts and information, or knowing about things. However, learning expectations in curricula are not restricted to knowledge. To know about things, while absolutely necessary, is not enough by itself. It is also important to know how to do things. In fact, sometimes it is more important to know how to do something than it is to know about it. This is **skills** learning, sometimes called procedural knowledge learning. For example, knowing how to drive a car or ride a bicycle safely can be done with very little knowledge of the physics of internal combustion engines or dynamic balance, respectively. Skills learning may include communication, thinking, social and motor skills. Clearly, since learning is mediated by others, we come to develop, attach and verbalize many **attitudes** to how and what we learn. These are the three categories of learning accounted for in Alberta Education curriculum documents.

Lillian Katz (1977), an early childhood specialist, calls attention to a fourth category of learning: **dispositions**. She refers to these as "habits of mind, not mindless habits." Dispositions include such educationally valuable phenomena as interest, curiosity, inventiveness and industry. Dispositions are tendencies to respond to experiences in particular ways. Dispositions and skills must be practised to be learned. They, along with attitudes, cannot be learned through lecture. They can be learned through modelling, or observation of competent practitioners. There is certainly an aspect of trial and error in developing them.

The process of learning these dispositions and skills can be improved by mediation in the form of specific, accurate and contingent feedback. As has already been discussed, a teacher can do this by asking specific questions, showing genuine interest or commenting on a particular aspect of the task that was well done, imaginative or related to something significant. General praise such as

"Well done!" is not useful. When learning aspects of knowledge such as concepts, students must actively construct these for themselves. Without the active engagement, learning becomes a relatively passive memorization process for the student. Memorizing verbal labels for concepts is not the same as constructing the concept for yourself. The former leaves you able to answer only low-level questions. The latter allows you to apply the concept.

Students can be taught knowledge to the exclusion of skills, or skills to the detriment of dispositions. For example, concrete thinkers required to memorize abstract concepts, such as grammar terms, will develop neither grammar concepts nor writing skills until the underlying operational concepts form. We must not give the impression that we are anti-skills, but rather help others to see the different ways skills develop, embedded in the student's ability to perform or achieve a task. Similarly, literacy learning is a multidimensional, complex ability, with cognitive, social and psychological aspects. Students pushed too early to undertake analytic reading skills may not come to develop a positive disposition toward and interest in reading for information and pleasure in later years.

Vygotsky's and later theorists' interest in teaching skills in a contextualized fashion depends on the notion that learning is a social activity from which individual progress is made. To explain this, Vygotsky (1962) explored the concept of **zone of proximal development**. A student's actual developmental level encompasses those functions that have completely developed. If one tests the child, what the child can do individually is the level of actual development. However, as every teacher knows, most children can do a fair bit more than this with guidance. With the "scaffolding" provided by an adult or a more competent peer through questioning, hints or other mediation, children can demonstrate functions they are in the process of developing. If one tests children in a dynamic way, with specified mediation and assistance, then one can determine the children's potential development level. This distance between the actual and potential level of the child is the zone of proximal development. It is the zone of development in which the child is currently learning. A child who demonstrates a wide zone may in fact have a different path of development, and with appropriate teaching, achieve a higher level than a child who exhibits a narrow zone of proximal development. Teaching is more likely to be effective when it is within the child's zone of proximal development, and when it extends the child's zone.

Most teachers have at least intuitive experience with this concept. A beginning teacher is often surprised in setting what appear to be fair exam questions that the students have inordinate difficulty answering. The teacher "knows" that the students can do

the questions or the skills. However, the teacher's observation of the students' success has been in the context of guidance and mediation. The students can accomplish the task there, but not in the decontextualized setting, without the mediation, on the examination. It is the function of some paper and pencil tests to demonstrate a student's actual knowledge. In day-to-day instruction the teacher must provide enough cognitive challenge and enough social support for the students to move ahead.

CONCLUSION

This is an exciting time to be an educator. We are learning so much about how students learn that it is difficult to be aware of most of it, much less put it all into practice. Each teacher, each school and each curriculum developer must focus on continued growth and awareness.

Students learn best through the teacher "carrying the content to the students personally," as Jere Brophy (1986) said. The teacher does this through academic talk, based on questioning and feedback, not extended lecturing.

If we seek to have students develop independent learning skills, we must prepare them with the knowledge, skills and attitudes to undertake learning. Independent learning means that students will develop skills in learning from print, from various media and with the guidance of teachers. They will understand the power of different modes of conveying information, but also the limits of each mode. They will have **cognitive knowledge** and skills to help them make wise decisions and solve problems. Independent learners need **self-knowledge** and **social/emotional knowledge** too, to equip them for dealing effectively with interrelationships and citizenship. Students need **knowledge of their physical growth** and of the practices that could enhance or undermine their physical and mental well-being.

As educators our efforts are directed at developing and supporting the growth of the whole child. Alberta Education's developmental framework documents are intended to assist in the process. This document on relationships among the domains of development, as well as the previous documents in the framework series on the cognitive, social and physical domains, can help educators support learning by designing curriculum that addresses all areas of development. These resources can also help teachers as they reflect on daily curriculum delivery and instructional needs for their particular students. Knowing how individuals develop cognitively, socially, emotionally and physically, and knowing that excellent practice depends on our addressing the needs of the whole child, can help us make curriculum and instruction more effective for all Alberta students.

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FEEDBACK

1. How is this document useful to you? Would further information on any of the topics be helpful?

2. How do you/your staff interrelate the domains of development in daily instruction?

3. Are there other areas relating to student development for which support documents would be useful?

Kindly complete the following:

I am a ☐ teacher (specify level) ☐ ECS - Gr. 6; ☐ Gr. 7 - 9; ☐ Gr. 10 - 12.
☐ school administrator
☐ system administrator
☐ other (please specify) _____

THANKS!

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